

**REMARKS**

Claims 1-10 were pending in this application.

Claims 1-10 have been rejected.

Claims 1, 3-7, and 9 have been amended as shown above.

Claims 11-20 have been added.

Claims 1-20 are now pending in this application.

Reconsideration and full allowance of Claims 1-20 are respectfully requested.

**I. REJECTION UNDER 35 U.S.C. § 102**

The Office Action rejects Claims 1, 2, 9, and 10 under 35 U.S.C. § 102 as being anticipated by U.S. Patent No. 6,011,815 to Eriksson et al. (“*Eriksson*”). This rejection is respectfully traversed.

A prior art reference anticipates the claimed invention under 35 U.S.C. § 102 only if every element of a claimed invention is identically shown in that single reference, arranged as they are in the claims. (*MPEP* § 2131; *In re Bond*, 910 F.2d 831, 832, 15 U.S.P.Q.2d 1566, 1567 (*Fed. Cir.* 1990)). Anticipation is only shown where each and every limitation of the claimed invention is found in a single prior art reference. (*MPEP* § 2131; *In re Donohue*, 766 F.2d 531, 534, 226 U.S.P.Q. 619, 621 (*Fed. Cir.* 1985)).

*Eriksson* recites a  $\Delta\Sigma$ -controlled phase locked loop modulation technique. (*Abstract*). A phase locked loop (elements 602-606) is coupled to a  $\Delta\Sigma$  modulator 610. (*Figure 6; Col. 5, Lines 15-37*). The  $\Delta\Sigma$  modulator 610 generates division factors that are used by a frequency divider

606 in the phase locked loop. (*Col. 5, Lines 27-34*). The  $\Delta\Sigma$  modulator 610 is controlled by a signal generated by a waveform generator 607, a pre-distortion unit 611, and an adder 608. (*Figure 6; Col. 5, Lines 38-48*). In order to provide multiple transmission channels, the adder 608 adds an offset 609 to the output of the pre-distortion unit 611. (*Col. 5, Lines 46-48*).

Claim 1 recites a “frequency discriminator” that receives an “incoming transmitted signal” and a “reference carrier frequency signal” and that generates a “correction signal corresponding to a difference between a center frequency of [the] incoming transmitted signal and [the] actual frequency of [the] reference carrier frequency signal.” Claim 1 also recites a “delta-sigma modulator” that is “controlled by [the] correction signal” and that is operable to “generate a sequence of integers … applied to [a] control input of [a] frequency divider circuit.”

*Eriksson* simply recites a phase locked loop that is controlled by a  $\Delta\Sigma$  modulator 610. In particular, the  $\Delta\Sigma$  modulator 610 controls the phase locked loop based on the output of the pre-distortion unit 611 and the offset 609. *Eriksson* lacks any mention of using both a received signal being demodulated and the output signal produced by the phase locked loop to generate a “correction signal” that controls the  $\Delta\Sigma$  modulator 610. Also, *Eriksson* lacks any mention of a correction signal that corresponds to a “difference” between the “center frequency” of the received signal and the “actual frequency” of the output signal produced by the phase locked loop.

The output of the adder 608 in *Eriksson* is used to control the  $\Delta\Sigma$  modulator 610, and the input to the adder 608 is based on an information signal 600. However, nothing in *Eriksson* recites that the output of the adder 608 is based in any way on the output signal produced by the

phase locked loop. Also, while the adder 608 receives an offset 609, the offset 609 represents the offset needed for a particular transmission channel. The offset 609 is not based in any way on the output signal produced by the phase locked loop. The offset 609 also does not correspond to a difference between a center frequency of a received signal and an actual frequency of an output signal produced by the phase locked loop of *Eriksson*.

As a result, *Eriksson* fails to anticipate a “frequency discriminator” that receives an “incoming transmitted signal” and a “reference carrier frequency signal” produced by a “phase-locked loop” as recited in Claim 1. *Eriksson* also fails to anticipate a “frequency discriminator” that generates a “correction signal corresponding to a difference between a center frequency of [the] incoming transmitted signal and [the] actual frequency of [the] reference carrier frequency signal” as recited in Claim 1.

For these reasons, *Eriksson* fails to anticipate the Applicants’ invention as recited in Claim 1 (and its dependent claims).

Claim 9 recites mixing a “transmitted signal” and a “reference carrier frequency signal ... produced by a phase-locked loop” to generate a “correction signal corresponding to a difference between a center frequency of the transmitted signal and an actual frequency of the reference carrier frequency signal.”

*Eriksson* lacks any mention that the  $\Delta\Sigma$  modulator 610 is controlled by a “correction signal” generated by mixing a transmitted signal with the output signal from a phase locked loop. Also, *Eriksson* lacks any mention that the correction signal corresponds to a “difference” between a “center frequency” of the transmitted signal and an “actual frequency” of the output

signal from the phase locked loop.

As a result, *Eriksson* fails to anticipate mixing a “transmitted signal” and a “reference carrier frequency signal … produced by a phase-locked loop” to generate a “correction signal corresponding to a difference between a center frequency of the transmitted signal and an actual frequency of the reference carrier frequency signal” as recited in Claim 9.

For these reasons, *Eriksson* fails to anticipate the Applicants’ invention as recited in Claim 9 (and its dependent claims).

Accordingly, the Applicants respectfully request withdrawal of the § 102 rejection and full allowance of Claims 1, 2, 9, and 10.

## II. REJECTION UNDER 35 U.S.C. § 103

The Office Action rejects Claims 3-8 under 35 U.S.C. § 103 as being unpatentable over *Eriksson* in view of U.S. Patent No. 5,170,131 to Takahiro et al. (“*Takahiro*”). This rejection is respectfully traversed.

In *ex parte* examination of patent applications, the Patent Office bears the burden of establishing a *prima facie* case of obviousness. (*MPEP* § 2142; *In re Fritch*, 972 F.2d 1260, 1262, 23 U.S.P.Q.2d 1780, 1783 (*Fed. Cir.* 1992)). The initial burden of establishing a *prima facie* basis to deny patentability to a claimed invention is always upon the Patent Office. (*MPEP* § 2142; *In re Oetiker*, 977 F.2d 1443, 1445, 24 U.S.P.Q.2d 1443, 1444 (*Fed. Cir.* 1992); *In re Piasecki*, 745 F.2d 1468, 1472, 223 U.S.P.Q. 785, 788 (*Fed. Cir.* 1984)). Only when a *prima facie* case of obviousness is established does the burden shift to the Applicant to produce

evidence of nonobviousness. (*MPEP* § 2142; *In re Oetiker*, 977 F.2d 1443, 1445, 24 U.S.P.Q.2d 1443, 1444 (Fed. Cir. 1992); *In re Rijckaert*, 9 F.3d 1531, 1532, 28 U.S.P.Q.2d 1955, 1956 (Fed. Cir. 1993)). If the Patent Office does not produce a *prima facie* case of unpatentability, then without more the Applicant is entitled to grant of a patent. (*In re Oetiker*, 977 F.2d 1443, 1445, 24 U.S.P.Q.2d 1443, 1444 (Fed. Cir. 1992); *In re Grabiak*, 769 F.2d 729, 733, 226 U.S.P.Q. 870, 873 (Fed. Cir. 1985)).

A *prima facie* case of obviousness is established when the teachings of the prior art itself suggest the claimed subject matter to a person of ordinary skill in the art. (*In re Bell*, 991 F.2d 781, 783, 26 U.S.P.Q.2d 1529, 1531 (Fed. Cir. 1993)). To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed invention and the reasonable expectation of success must both be found in the prior art, and not based on the Applicant's disclosure. (*MPEP* § 2142).

Claims 3-8 depend from Claim 1. As shown above in Section I, Claim 1 is patentable. As a result, Claims 3-8 are patentable due to their dependence from an allowable base claim.

Accordingly, the Applicants respectfully request withdrawal of the § 103 rejection and full allowance of Claims 3-8.

**III. NEW CLAIMS**

The Applicants have added new Claims 11-20. The Applicants respectfully submit that no new matter has been added. The Applicants respectfully request entry and full allowance of Claims 11-20.

**IV. CONCLUSION**

The Applicants assert that all pending claims in the application are in condition for allowance and respectfully request full allowance of such claims.

**SUMMARY**

If any outstanding issues remain, or if the Examiner has any further suggestions for expediting allowance of this application, the Applicants respectfully invite the Examiner to contact the undersigned at the telephone number indicated below or at [wmunck@davismunck.com](mailto:wmunck@davismunck.com).

The Commissioner is hereby authorized to charge any additional fees connected with this communication (including any extension of time fee) or credit any overpayment to Davis Munck Deposit Account No. 50-0208.

Respectfully submitted,

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